

# **Ecosystem Restoration Activities on the Upper Mississippi River and the Environmental Management Program (EMP)**

**Presentation for the 2003 Watershed System Conference**

**May 13, 2003**

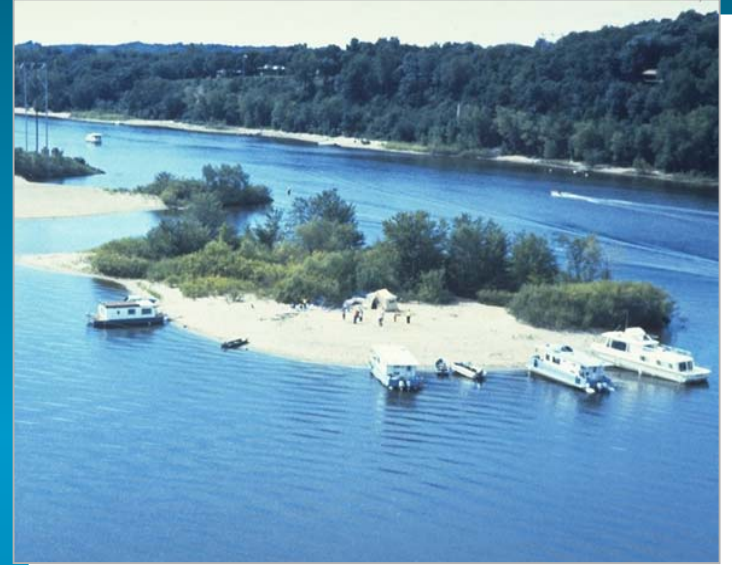
**by**

**Kevin J. Landwehr**

**Hydraulic Engineer**

**Rock Island District, US Army Corps of Engineers**

# Upper Mississippi River System



# Upper Mississippi River System





# **National Significance of Upper Mississippi River System**

**“... the intent of Congress to recognize that system as a nationally significant ecosystem and a nationally significant commercial navigation system. ... shall be administered and regulated in recognition of its several purposes.”**

**Citation: Water Resources Development Act of 1986, Section 1103(a)(2).**



**This isn't heaven...**

**This is Iowa.**





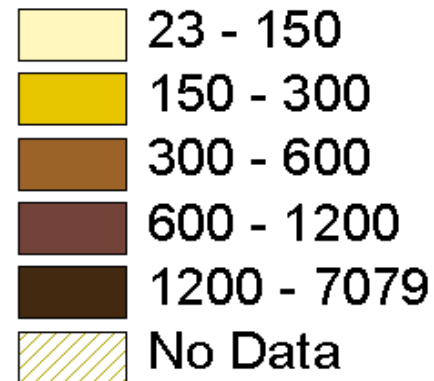
**This isn't heaven...**

**This is Iowa.**

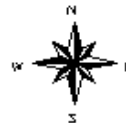


# Total Suspended Solids Yield

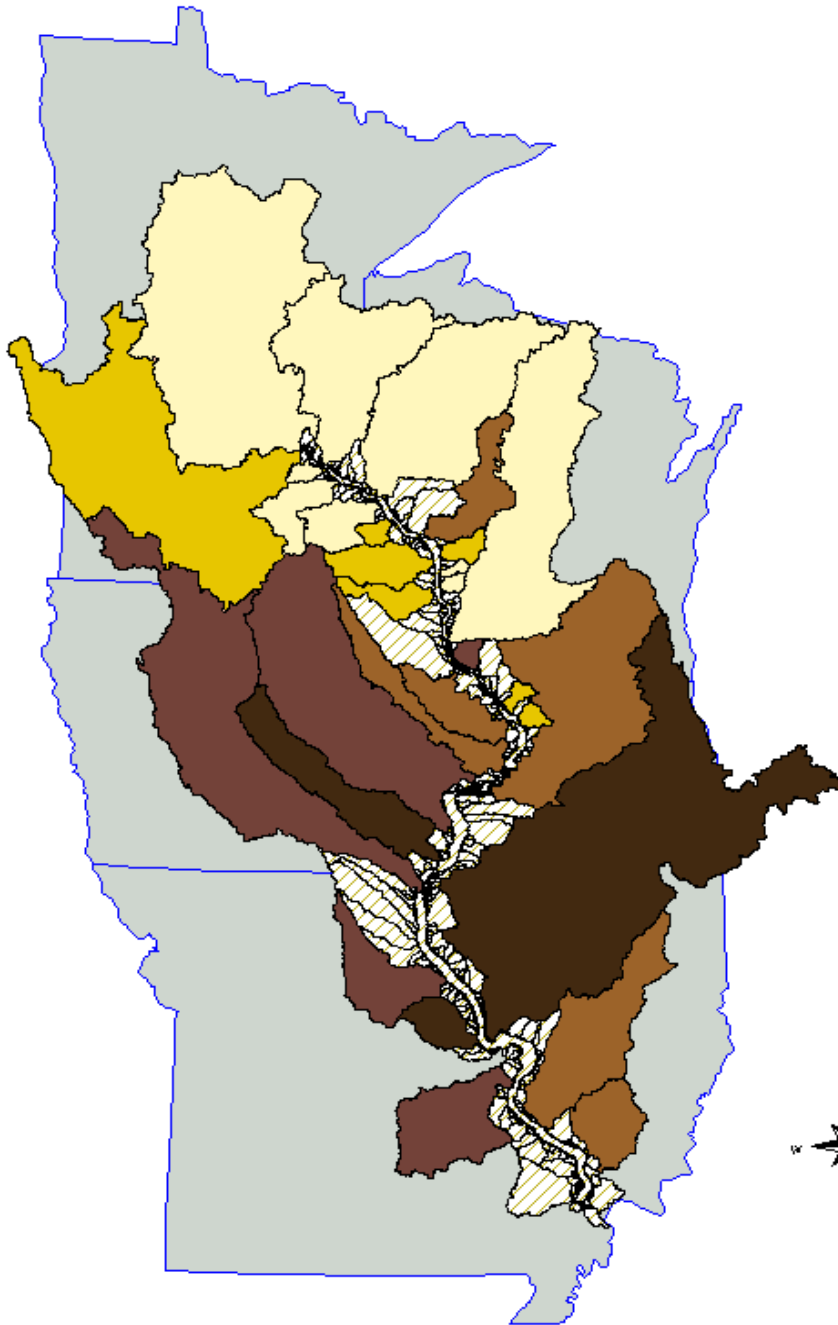
Kilograms / Hectare / Year



Mean annual yield from USGS gaging stations and selected LTRMP monitoring sites in the upper Mississippi River basin

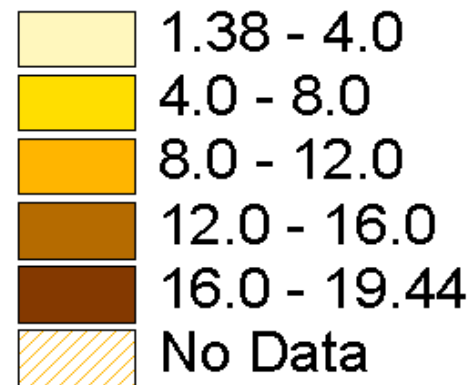


100 0 100 200 Miles

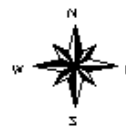


# Total Nitrogen Yield

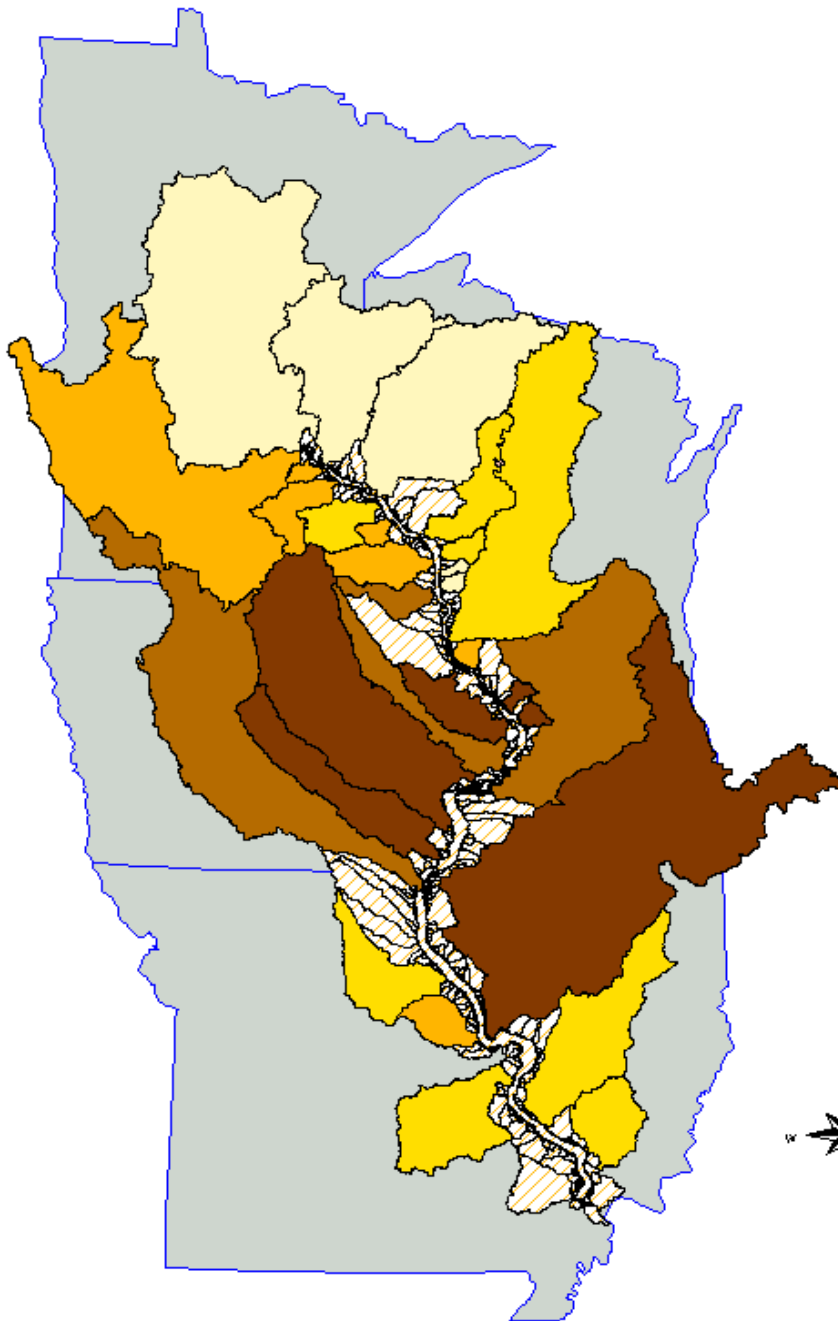
Kilograms / Hectare / Year



Mean annual yield from USGS gaging stations and selected LTRMP monitoring sites in the upper Mississippi River basin



100 0 100 200 Miles



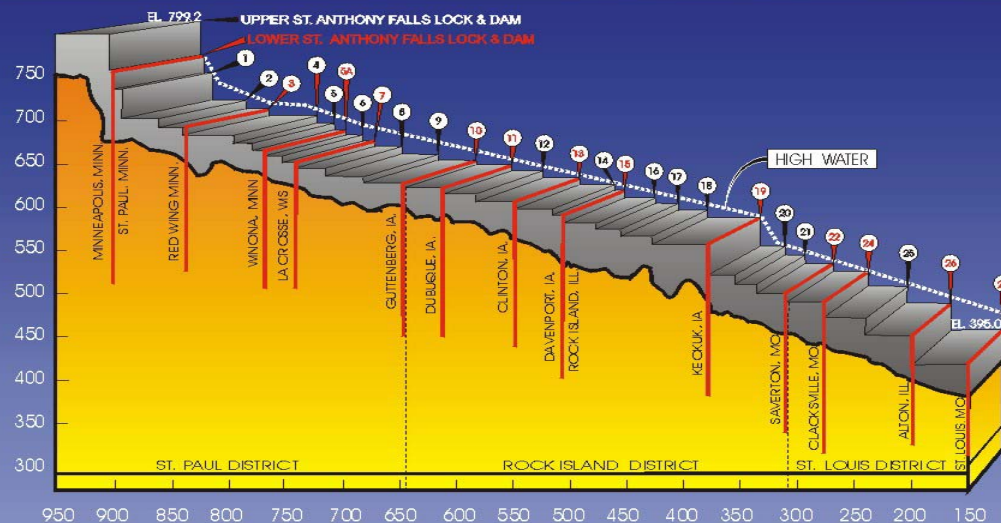


# Impoundment and Continued Operation and Maintenance



US Army Corps  
of Engineers  
St. Paul District

## STAIRWAY OF WATER Minneapolis to St. Louis



## Commercial Navigation

# **Environmental Restoration**

- **Section 1135 (WRDA 1986): Restoration of Fish and Wildlife Habitat Impacted by Previous Corps Projects**
- **Section 206 (1996): Aquatic Ecosystem Restoration, No Relationship to a Previous Corps Project Required**
- **Section 204 (1992): Protect, Restore, or Create Aquatic Habitat, In Connection With Dredging of a Federal Project**



An aerial photograph of a wetland area. A dark, winding river flows through the landscape, surrounded by numerous green, tree-covered islands and peninsulas. The water is a deep brown color, and the vegetation is a vibrant green. The overall scene depicts a natural, undisturbed environment.

# **ENVIRONMENTAL MANAGEMENT PROGRAM**

**(EMP)**



# Background

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**The Upper Mississippi River System Environmental Management Program (UMRS-EMP) is a Federal-State partnership to restore and monitor the natural resources of the river system.**



# EMP – History and Background

- **Established by the 1986 Upper Mississippi River Management Act (within 1986 Water Resources Development Act [WRDA]).**
- **Legislation created 3 major programs to last *10 years***
  - 1. Long Term Resource Monitoring (LTRM)**
  - 2. Computerized Inventory and Analysis System (CIA)**
  - 3. Habitat Rehabilitation and Enhancement Projects (HREP)**
- **Funding appropriations are provided through the USACE construction general account**
- **75% Federal / 25% non-Federal cost-sharing formula**
- **Total authorized funding: 210 Million through FY98**
- **Total appropriations: 176 Million through FY98**
- **Actual expenditures: 160 Million through FY98**

# Report to Congress – December 1997

## Report to Congress

*An Evaluation of the Upper Mississippi River System  
Environmental Management Program*



U.S. Army Corps of Engineers  
Rock Island District  
December 1997



## Recommendations to the United States Congress 8

**T**he EMP is providing important outputs:

- Restoration, protection and enhancement of aquatic and wetland and floodplain habitat throughout the UMRS.
- Monitoring, data analysis, and applied research resulting in an increased understanding of both the regulated and open reaches of the UMRS.
- Improved and extended partnership among the many UMRS management agencies, interest groups, and the general public.
- A model program applicable to other river systems and water resources.

This report both qualitatively and quantitatively concludes that an expanded, more robust EMP for the UMRS is needed. The UMRS-EMP must be of the magnitude, standing, and duration necessary to: meet the long term data and information needs of river managers and users; offset the continuing loss of UMRS aquatic, wetland, and floodplain habitats; support future efforts to more comprehensively manage the UMRS and its basin; and, ultimately, fulfill public expectations of a healthy, sustainable UMR ecosystem that can simultaneously accommodate equally important recreational and economic uses.



**H&H Branch**  
**Rock Island District**



# 1999 WRDA

- **Indefinitely extended program authority**
  - *Reports to Congress every six years*
- **Increased HREP authorization**
  - *\$22,750,000 per fiscal year*
- **Increased LTRMP authorization**
  - *\$10,420,000 per fiscal year*
- **Modified HREP cost-sharing formula**
  - *65% Federal / 35% non-Federal*

# ***EMP GOALS AND OBJECTIVES***

- **Restoration , protection, and enhancement of critical aquatic, wetland, and floodplain habitat types throughout the UMRS.**
- **Systemic resource monitoring, data analysis, and applied research resulting in an increased understanding of both the regulated and open reaches of the UMRS.**
- **Improved communications and expanded partnership among the many UMRS management agencies, interest groups, and the general public.**

# COLLABORATION - EMPCC



US Army Corps  
of Engineers®



Corporations

Levee Districts



PUBLIC



NGO's



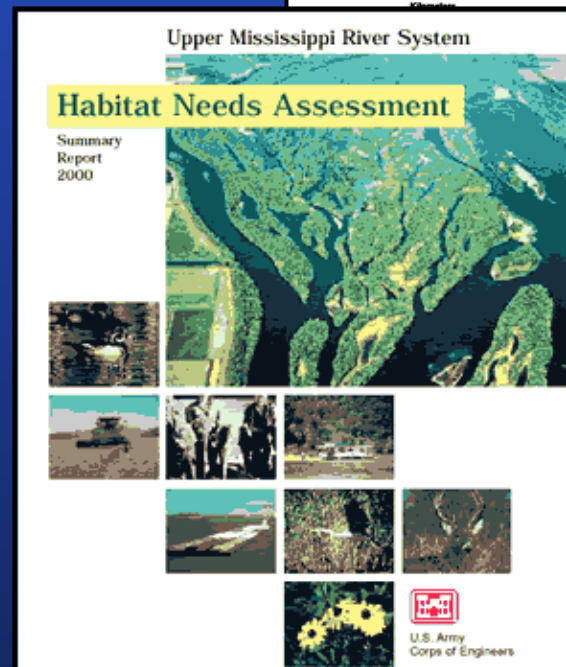
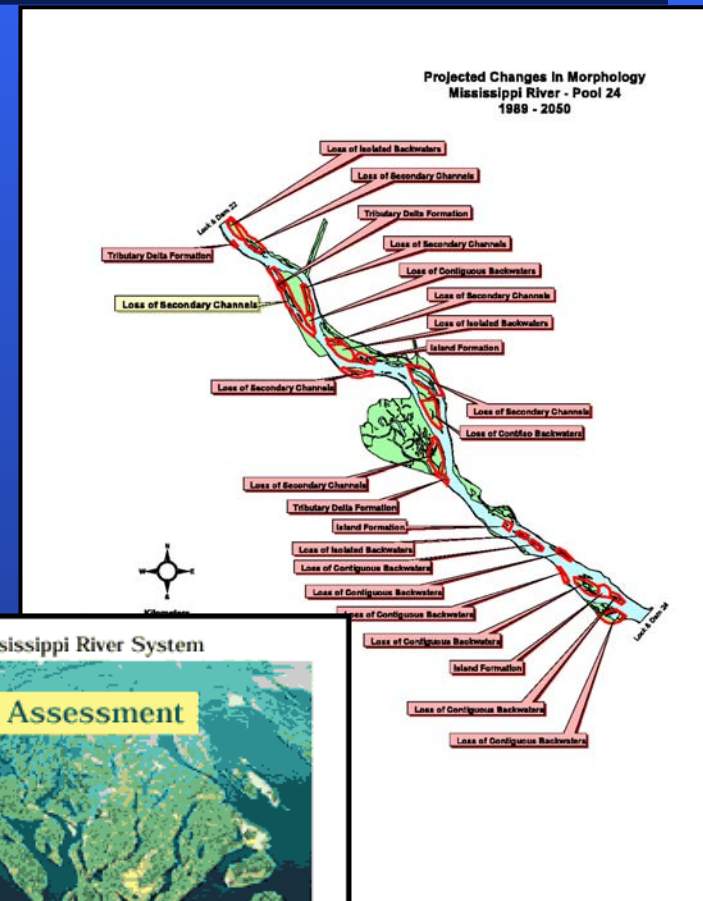
# Habitat Needs Assessment (HNA)

## Funded through EMP

### Goals:

- Establish a technically sound, consensus-based management framework for the restoration, protection, and enhancement of the UMR Ecosystem
- Identify (at system, pool, and reach scales) long-term habitat requirements.
- Refine the focus of future system monitoring and research activities.

## Period Updates



# Restructured UMR & IWW

## Navigation Study

**Objective Tool** x nning Workshop

Upper Mississippi River - Illinois Waterway System  
Ecosystem Objective Tool

Ecosystem Element  
☐ Water Quality ☒ Geomorphology ☐ Other  
☐ Pattern of Habitats ☐ Plants and Animals

Parameter  
☐ Backwater Depth ☐ Connectivity  
☒ Water Level ☐ Other

Extent  
☐ Main Channel  
☒ Backwater Areas  
☐ Other

Target Range  
☐ 1. 0.3 m below project pool at dam  
☐ 2. 0.6 m below project pool at dam  
☒ 3. 1.0 m below project pool at dam  
☐ 4. >1 m below project pool at dam  
☐ 5. Other

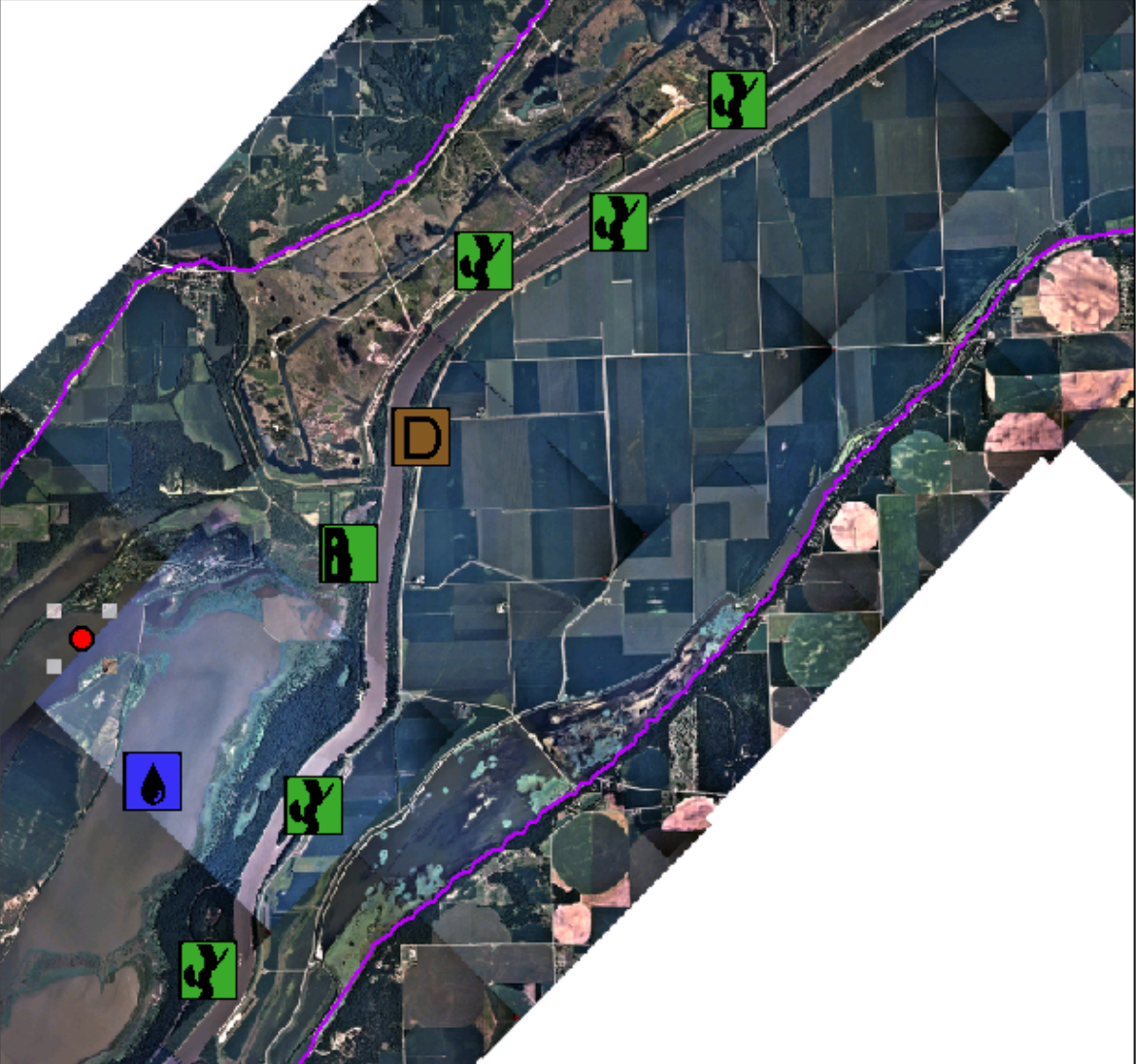
Seasons  
☐ Spring ☒ Summer ☐ All Year  
☐ Fall ☐ Winter

Frequency of Occurrences (Years out of 10)

Target Date

Comments  
Will impact about 1,000 acres.

Clear Selections Cancel Submit



**INFORMATION**

**17 %**

**PLANNING**

**ASSESSMENT**

**3 %**

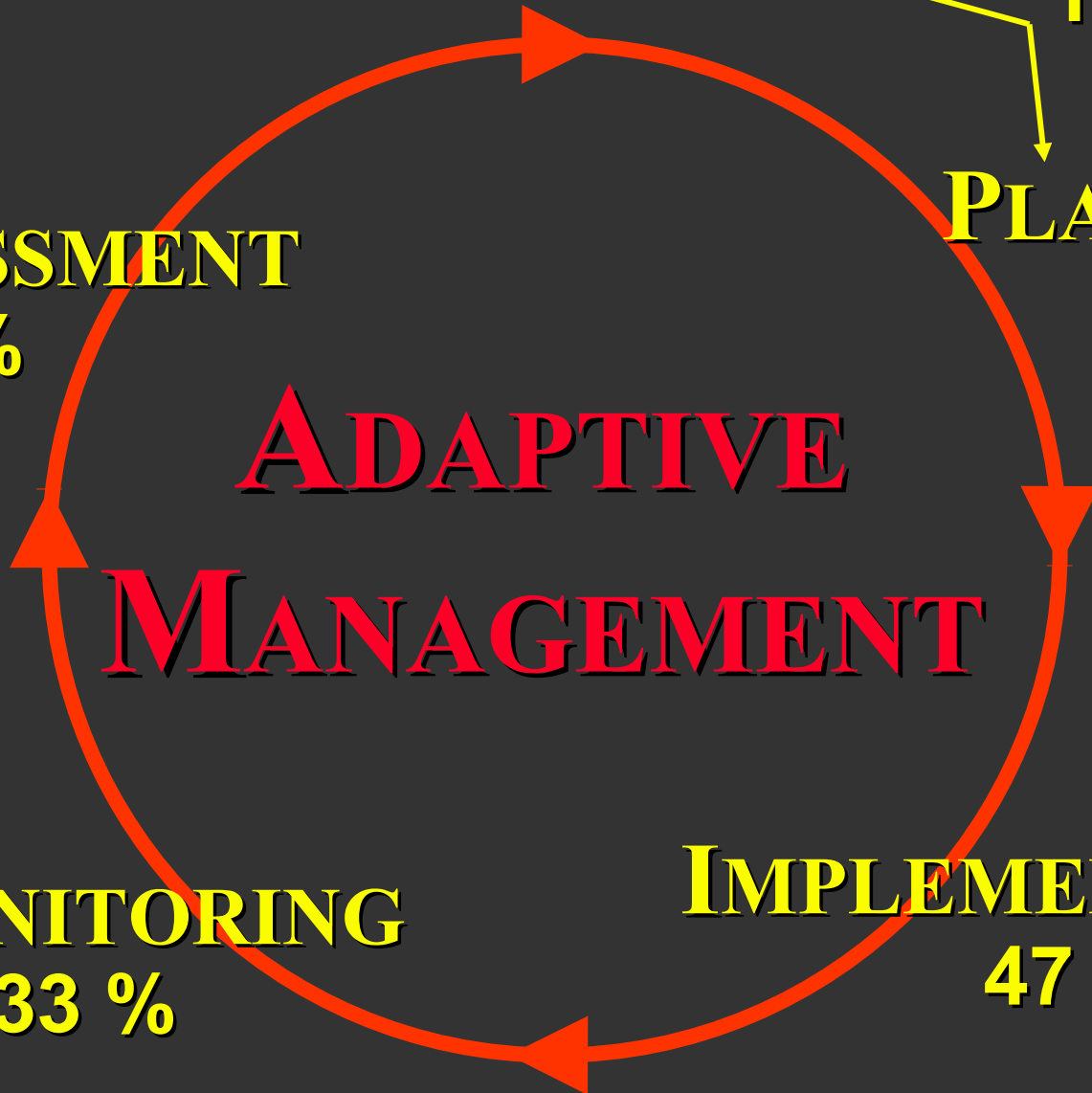
**ADAPTIVE  
MANAGEMENT**

**MONITORING**

**33 %**

**IMPLEMENTATION**

**47 %**





# LONG TERM RESOURCE MONITORING PROGRAM (LTRMP)

- *Monitoring*
- *Data Analysis*
- *Applied Research*
- *Mapping*
- *Information Clearinghouse*



# **HABITAT REHABILITATION AND ENHANCEMENT PROJECTS (HREP)**

- **Increase habitat diversity (wetland, aquatic, and benthic)**
- **Provide off-channel over wintering and spawning habitat**
- **Provide reliable floodplain wetlands and associated food resources**
- **Create additional shelter zones and nesting sites**
- **Increase numbers of mast producing trees**

# UPPER MISSISSIPPI RIVER SYSTEM ENVIRONMENTAL MANAGEMENT PROGRAM HABITAT REHABILITATION AND ENHANCEMENT PROJECTS

SITE  
NO.

PROJECT

1. RICE LAKE, MN
2. LONG MEADOW LAKE, MN
3. PETERSON LAKE, MN
4. INDIAN SLOUGH, WI
5. FINGER LAKES, MN
6. ISLAND 42, MN
7. SPRING LAKE PENINSULA, WI
8. SPRING LAKE ISLANDS, WI
9. POLANDER LAKE, MN
10. SMALL SCALE DRAWDOWN, WI
11. TREMPLEAU REFUGE, WI
12. LONG LAKE, WI
13. LAKE ONALASKA, WI
14. EAST CHANNEL, WI/MN
15. POOL 8 ISLANDS, WI
16. POOL SLOUGH, IA/MN
17. BLACKHAWK PARK, WI
18. LANSING BIG LAKE, IA
19. CONWAY LAKE, IA
20. LAKE WINNESHIEK, WI
21. CAPOLI SLOUGH, WI
22. POOL 9 ISLAND, WI
23. COLD SPRINGS, WI
24. HARPERS SLOUGH, IA/WI
25. AMBROUSE SLOUGH, WI
26. BUSSEY LAKE, IA
27. GUTTENBERG PONDS, IA
28. MISS RIVER BANK STABILIZATION, IA/MN/WI
29. BERTOM-McCARTNEY LAKES, WI
30. POOL 11 ISLANDS, IA/WI
31. POOL 12 OVERWINTERING, IA-IL
32. PLEASANT CREEK, IA
33. SMITH CREEK, IA
34. BROWN'S LAKE, IA

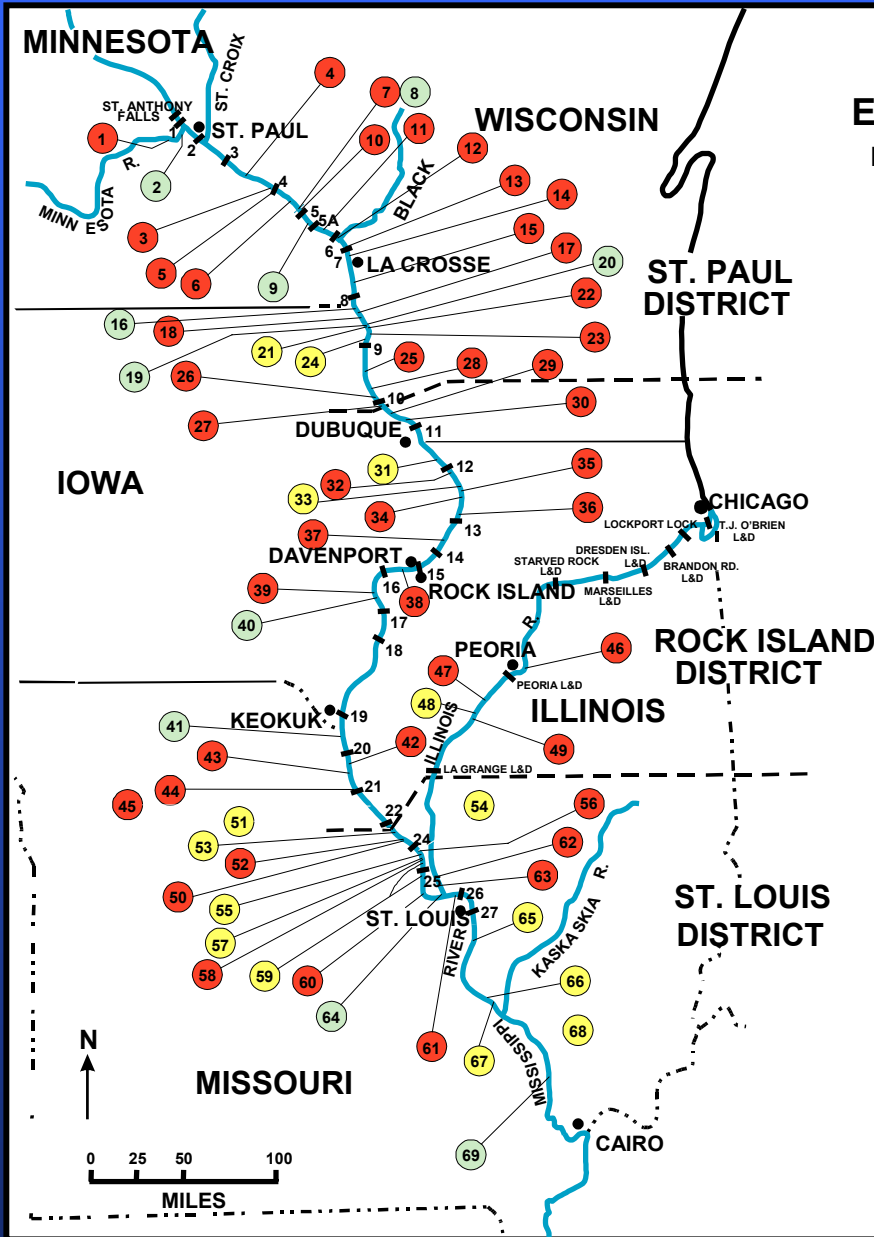
SITE  
NO.

PROJECT

35. SPRING LAKE, IL
36. POTTERS MARSH, IL
37. PRINCETON REFUGE, IA
38. ANDALUSIA REFUGE, IL
39. BIG TIMBER, IA
40. LAKE ODESSA, IA
41. FOX ISLAND, MO
42. GARDNER DIVISION, IL
43. COTTONWOOD ISLAND, MO
44. MONKEY CHUTE, MO
45. BAY ISLAND, MO
46. PEORIA LAKE, IL
47. BANNER MARSH, IL
48. RICE LAKE, IL
49. CHAUTAUQUA REFUGE, IL
50. CLARKSVILLE REFUGE, MO
51. TED SHANKS, MO
52. PHARRS ISLAND, MO
53. ANGLE BLACKBURN, MO
54. REDS LANDING, IL
55. NORTON WOODS, MO
56. STAG & KEETON ISLANDS, MO
57. SANDY CHUTE, IL
58. BATHTOWN MGMT. AREA, IL
59. POOLS 25 & 26, MO
60. CUIVRE ISLAND, MO
61. DRESSER ISLAND, MO
62. STUMP LAKE, IL
63. SWAN LAKE, IL
64. CALHOUN POINT, IL
65. JEFFERSON BARRACKS, IL
66. FT. CHARTRES SC, IL
67. ESTABLISHMENT CHUTE SC, MO
68. STONE DIKE ALTERATIONS, MO/IL
69. SCHENIMANN CHUTE, MO

STATUS AS OF: MARCH 2003

- UNDER CONSTRUCTION OR CONSTRUCTED
- GENERAL DESIGN INITIATED
- PLANNING PROCESS
- LOCK & DAM SITES





# SUMMARY 1988 - 2002

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*41 projects completed*

71,000 acres of habitat

*7 projects under construction*

11,500+ acres of habitat

*21 projects in design*

43,000+ acres of habitat



**69 Projects, Total Acres: 125,000+**

**Per project range of investment: \$56,000 - \$13 million +  
(majority of projects completed to date: \$1-4 million range)**

# **H&H Support for the Environmental Management Program**



**H&H Branch**  
**Rock Island District**

# Island Protection and Restoration

Pool 8 Islands HREP Phase II,  
near Stoddard, Wisconsin



October 1961



August 1994



August 2000





***Brown's  
Lake***



**Brown's Lake, Iowa**

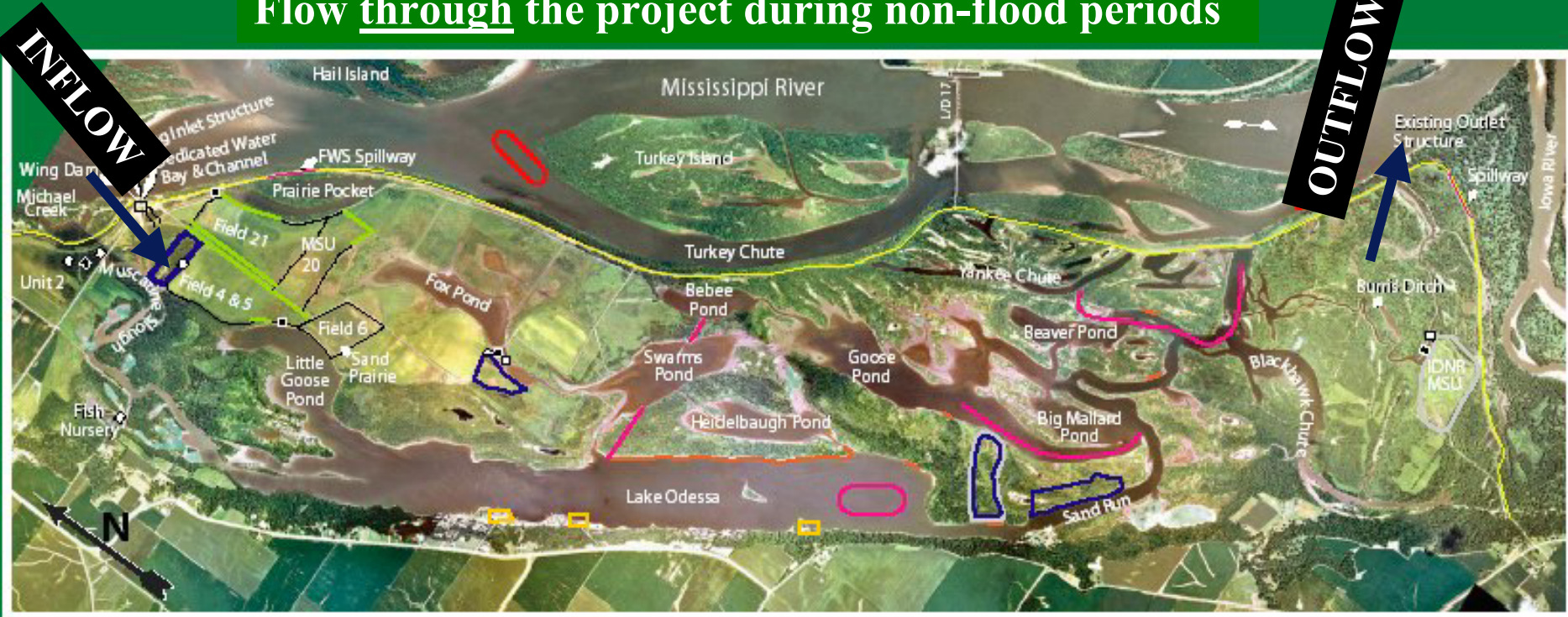
**Pool 13**



# LAKE ODESSA

## Project Features Map

Flow through the project during non-flood periods



## Pools 17 & 18

- Enhancement of 6 Moist Soil Management Units
- Perimeter Levee Restoration (8 miles)
- Rock Spillway (1,200 ft)
- Fisheries Enhancement
  - Channel/Deep Hole Dredging
  - Nursery
- Mast Tree Planting (45 acres)
- Partners: USFWS & Iowa DNR



# APATHY

**If We Don't Take Care Of The Customer,  
Maybe They'll Stop Bugging Us.**





**THANK YOU!**



**US Army Corps  
of Engineers**  
Rock Island District

• **Clock Tower Building  
District Headquarters  
Rock Island, Illinois**